UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30506

CR NO. 63

OVER THE

STANCHFIELD CREEK

DISTRICT 3 - ISANTI COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 74)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 30506, Piers 1 and 2; and South Abutment were found to be in good condition with no defects of structural significance observed. The timber piles were in good condition and exhibited only minor checking. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The timber piles at both piers were in good condition with minor checking up to 1/4 inch in width.

(B) The upper and lower bracing connection to the easternmost pile of Pier 2 exhibited minor splits which did not affect the connection

(C) The upstream piles of each pier were protected with a steel ice breaker which exhibited moderate corrosion with rust delamination with up to ¼ inch thick and pitting up to ¼ inch in diameter with 1/16 inch deep pitting extending from the channel bottom to 2 feet above the waterline.

(D) A light accumulation of timber debris consisting of logs and branches up to 8 inches in diameter along with some vegetation was observed at the upstream nose of Pier 1 extending from the channel bottom to 2 feet above the waterline. The accumulation was 15 feet long by 3 feet wide

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 30506

Feature Crossed: Stanchfield Creek

Feature Carried: CR No. 63

Location: District 3 - Isanti County

Bridge Description: The bridge superstructure consists of three spans of timber deck and stringers that are supported by two timber pile piers and two timber pile abutments. The piers are numbered 1 and 2 starting from the south end of the bridge. Each pier consists of a timber pier cap supported by eight timber piles. The abutments consist of ten timber piles with horizontal wall planking.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 16, 2007

Weather Conditions: Rainy, 50° F

Underwater Visibility: 1.0 feet

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2 and South Abutment

General Shape: Each pier consists of a timber pier cap supported by a single row of eight timber piles. Timber cross bracing interconnects the piles. The abutment consists of a timber pile cap supported by ten timber piles with horizontal backwall planking.

Maximum Water Depth at Substructure Inspected: Approximately 4.2 feet.

4. WATERLINE DATUM

Water Level Reference: Top of the pile cap at the west end of Pier 1.

Water Surface: The waterline was approximately 7.0 feet below reference.
Waterline Elevation = 931.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code O/02

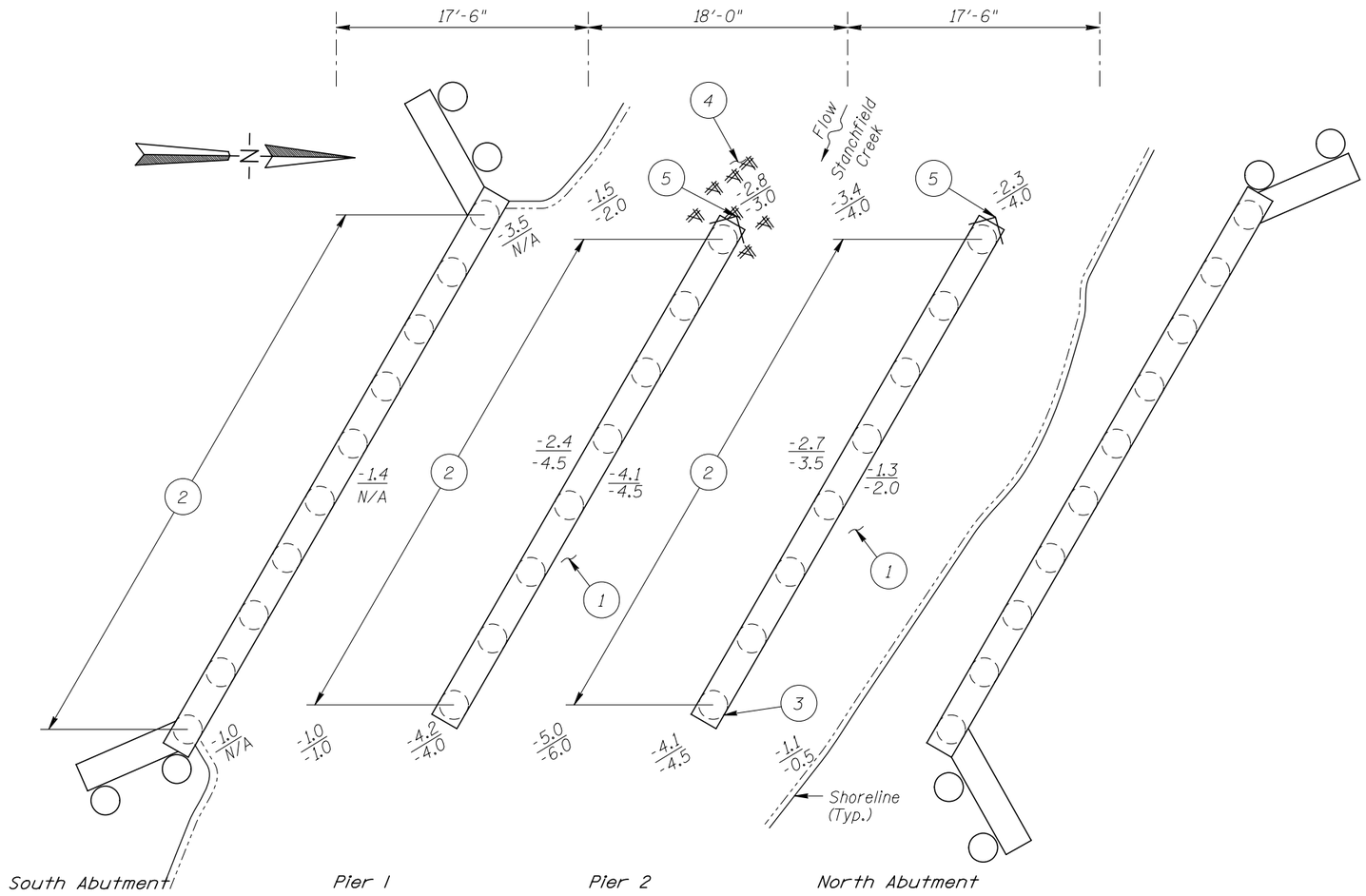
Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes X No

Photograph 1. View of Pier 1 and Timber Debris, Looking Northeast.

Photograph 2. View of Pier 2, Looking Southwest.

Photograph 3. View of South Abutment, Looking Southeast.



SOUNDING PLAN

TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 and the South Abutment were inspected underwater.
2. At the time of inspection on October 16, 2007, the waterline was located approximately 7.0 feet below the top of the pile cap at the upstream end of Pier 1. This corresponds with a waterline elevation of 931.5 based on the previous report dated September 25, 2002.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at the mid points between the substructure units.

INSPECTION NOTES:

(1) The channel bottom consisted silty sand and of 6- to 8-inch-diameter cobbles with up to 1 inch of probe rod penetration.

(2) The timber piles exhibited minor checking up to 1/4 inch wide.

(3) The upper and lower cross bracing connection to the easternmost pile of Pier 2 exhibited minor splits.

(4) A light accumulation of timber debris consisting of 8-inch-diameter and smaller logs along with some vegetation was observed at the upstream end of Pier 1 and extended from the channel bottom to 2 feet above the waterline.

(5) The upstream piles were protected with a steel ice breaker that exhibited moderate corrosion with rust nodules up to 1/4 inch in diameter with 1/16-inch-deep pitting from the channel bottom to 2 feet above the waterline.

Note:

All soundings based on 2007 waterline location.

Legend

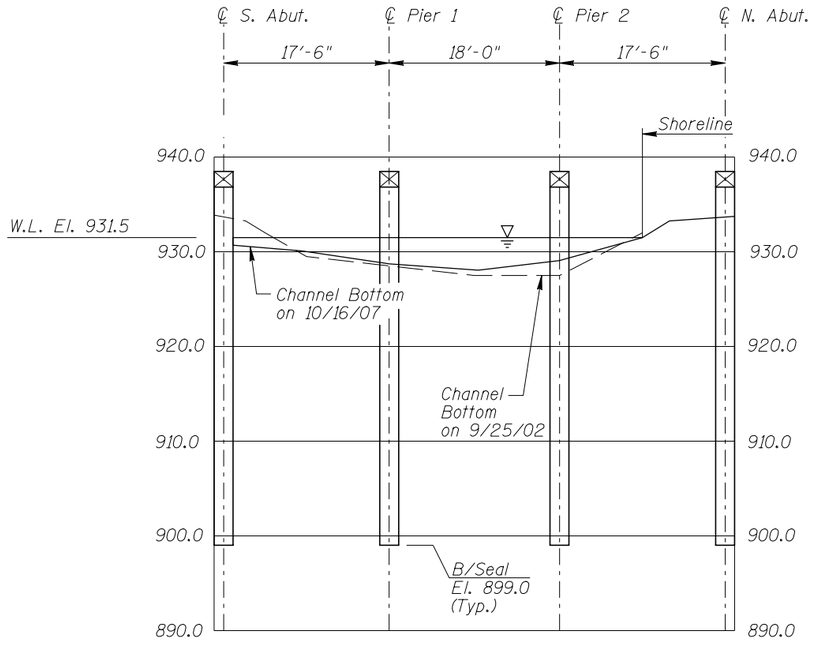
-4.0	Sounding Depth from Waterline (9/25/02)
-3.5	Sounding Depth from Waterline (10/6/01)
	Timber Pile (under pile cap)
	Timber Pile
	Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

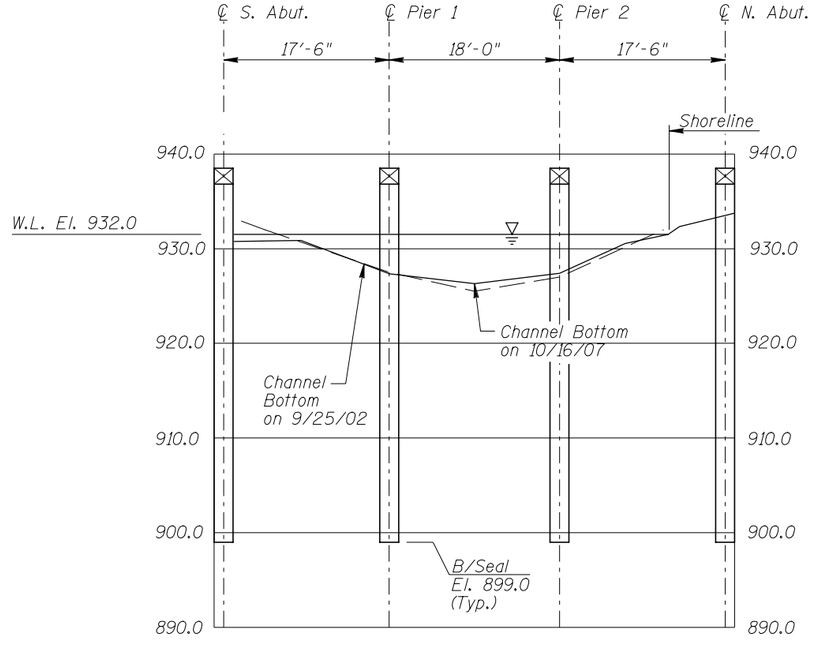
STRUCTURE NO. 30506
OVER STANCHFIELD CREEK
DISTRICT 3, ISANTI COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MDK	COLLINS ENGINEERS	Date: OCT. 2007
Checked By: DGS	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 52210074		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: DGS		Scale: 1/16"=1'
Code: 52210074		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 16, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 30506 WEATHER: Rain, 50°F

WATERWAY CROSSED: Stanchfield Creek

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 2:10 p.m.

TIME OUT OF WATER: 2:40 p.m.

WATERWAY DATA: VELOCITY Negligible / None

VISIBILITY 1.0 feet

DEPTH 4.2 feet maximum at Piers 1

ELEMENTS INSPECTED: Piers 1 and 2, and South Abutment

REMARKS: Overall, the timber piles at the substructure units were in good condition with minor checking up to 1/4 inch in width. The upper and lower bracing connection to the easternmost pile of Pier 2 exhibited minor splits which did not affect the connection. The upstream piles of each pier were protected with a steel ice breaker which exhibited moderate corrosion with rust delamination from the channel bottom to 2 feet above the waterline. The abutment backwall planking at the South Abutment was in good condition. A light amount of vegetation and timber drift was observed at the upstream end of Pier 1 extending from the channel bottom to 2 feet above the waterline.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30506
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Stanchfield Creek

INSPECTION DATE October 16, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	4.2’	7	N	N	9	7	7	8	8	N	7	7	N	N	7	N	N	N
	Pier 2	4.1’	7	N	N	9	6	7	8	N	N	N	8	N	N	7	N	7	N
	South Abutment	1.4’	7	7	N	9	N	7	8	N	N	N	8	N	N	7	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the timber piles at the substructure units were in good condition with minor checking up to 1/4 inch in width. The upper and lower bracing connection to the easternmost pile of Pier 2 exhibited minor splits which did not affect the connection. The upstream piles of each pier were protected with a steel ice breaker which exhibited moderate corrosion with rust delamination from the channel bottom to 2 feet above the waterline. The abutment backwall planking at the South Abutment was in good condition. A light amount of vegetation and timber drift was observed at the upstream end of Pier 1 extending from the channel bottom to 2 feet above the waterline.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.